The views expressed in this paper are those of the author and do not necessarily reflect the views of the Department of Defense or any of its agencies. This document may not be released for open publication until it has been cleared by the appropriate military service or government agency.



IMPROVING THE DoD SUPPLY CHAIN
"CAN COMMERCIAL SUPPLY CHAIN MANAGEMENT
SOFTWARE DO THE JOB?"

BY

LIEUTENANT COLONEL EDWARD R. VISKER United States Army

DISTRIBUTION STATEMENT A:

Approved for Public Release.

Distribution is Unlimited.

USAWC CLASS OF 2000



U.S. ARMY WAR COLLEGE, CARLISLE BARRACKS, PA 17013-5050

DITO QUALITY INSPECIAL A

20000613 172

USAWC STRATEGY RESEARCH PROJECT

Improving the DoD Supply Chain
"Can Commercial Supply Chain Management Software Do the Job?"

by

LTC Edward R. Visker United States Army

Professor Harold W. Lord
Project Advisor

The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its Agencies.

DISTRIBUTION STATEMENT A: Approved for public release. Distribution is unlimited.

ii

ABSTRACT

AUTHOR:

LTC Edward R. Visker

TITLE:

Improving the DoD Supply Chain -- "Can Commercial Supply Chain Management

Software Do the Job?"

FORMAT:

Strategy Research Project

DATE:

10 April 2000

PAGES: 64

CLASSIFICATION: Unclassified

The pressure on DoD to reduce costs will continue and mission accomplishment will depend on a clear vision void of Service parochial attitudes. Joint Vision (JV) 2010 was developed to leverage technology to achieve increased effectiveness as the template to transform DoD into a more effective joint force. Its four operational concepts—dominant maneuver, precision engagement, full-dimension protection, and focused logistics—aim at full-spectrum dominance. Focused Logistics is the fusion of logistics information and transportation technologies for rapid crisis response, deployment, and delivery of tailored logistics packages directly to the warfighter. It requires an end-to-end understanding of the supply chain with integrated information and technology to reduce the logistics footprint for more agile sustainment around the globe. DoD must achieve dramatic improvement to attain focused logistics thus; reengineering of the supply system is required. This paper examines the feasibility of replacing the current inefficient supply system with a commercially available single, seamless, supply chain management system. It looks at some current initiatives and who's in charge of them. The issue -- Can the Services work together to develop an effective distribution based supply system that reduces cost and shrinks the logistics footprint? Or, will DoD nibble around the edges and continue suboptimizing the potential improvements available through effective use of technology so adroitly called for in JV 2010?

iv

TABLE OF CONTENTS

ABSTRACT	
TABLE OF CONTENTS	V
ACKNOLEDGEMENTS	VII
LIST OF ILLUSTRATIONS	IX
IMPROVIING THE DOD SUPPLY SYSTEM	1
BACKGROUND	2
CURRENT SUPPLY	4
WHY CHANGE - WHY REENGINEER THE SUPPLY SYSTEM	8
UNDERSTANDING SUPPLY CHAIN MANAGEMENT	9
ONGOING PROJECTS AND PROGRAMS	10
COMMERCIAL SUPPLY CHAIN MANAGEMENT SYSTEMS	14
ASSESSMENT	18
CONCLUSION	25
RECOMMENDATIONS	28
ENDNOTES	31
BIBLIOGRAPHY	37
APPENDIX A (CLASS IX - REPAIR PARTS SUPPLY PROCEDURES)	A-1
APPENDIX B (RESPONSIBILITIES)	B-1
APPENDIX C (MILITARY STANDARD LOGISTICS SYSTEMS IMILS) DSCRIPTIONS)	

vi

ACKNOWLEDGEMENTS

A special thanks to the following professionals who supported my research efforts to complete this Strategy Research Project.

BG Barbara Doornink, Commander Defense Distribution Center (DDC), Defense Logistics Support Command, Defense Logistics Agency (DLA) – Research Sponsor.

Professor John J. Coyle, The Pennsylvania State University (PSU), Department of Business Logistics and Center for Logistics Research (CLR) – Research Advisor.

Professor Harold W. Lord, United States Army War College, Department of Command, Management and Leadership (DCLM) – Faculty Advisor.

Additional thanks to the following individuals who assisted by providing information.

COL Scott West, LTC John Klotsko, Mr. Mike Brown, and Mr. John Rephlo from the Joint Staff J4

CPT Joe Faris, Ms. Denise Rominger, Mr.Ned Hartley, Mr. Scott Rosbaugh from the Defense Distribution Center

Professor Thomas W. Sweeney, Professor of Strategy and Theater Logistics, CSL, USAWC.

LIST OF ILLUSTRATIONS

FIGURE 1 ELEMENTS OF GLOBAL DISTRIBUTION2
FIGURE 2 GLOBAL REQUISITION / DISTRIBUTION PROCESS AND SYSTEMS4
FIGURE 3 LARGE OPPORTUNITY FOR IMPROVED PERFORMANCE AT LOWER COST5
FIGURE 4 SYNCHRONIZED SUPPLY CHAIN6
FIGURE 5 SUPPLY CHAIN MANAGEMENT AND GLOBAL DISTRIBUTION9
FIGURE 6 DOD SUPPLY CHAIN DATA ENVIRONMENT21
FIGURE A-1 GLOBAL DISTRIBUTION PROCESS MAP FOR CLASS IX
FIGURE A-2 CONSUMABLE ITEMS REPAIR PARTS FLOW



IMPROVING THE DOD SUPPLY CHAIN "Can Commercial Supply Chain Management Software Do the Job?"

National purpose is achieved through the integration of all elements of national power-information, diplomatic, economic, and military. The national purpose must dominate all strategy.

National strategy is developed to preserve national interests and military force is at times used to achieve
national security objectives and to preserve peace. The National Command Authority, the Office of the
Secretary of Defense, and the Services have the responsibility to create, support, fund and employ
military forces. Joint combatant commands then develop plans, in line with national objectives and
capabilities, to counter the threat(s). The decisions of command are a blend of strategy, tactics, and
logistics. The employment of the force is tactics (i.e. the direction of power to obtain objectives).

Logistics creates and sustains the forces and weapons tactically employed.¹

The US National Security Strategy (NSS) and the National Military Strategy (NMS) have changed in response to global political and economic turbulence. The shift toward domestic priorities requires a Revolution in Military Affairs (RMA) and has put pressure on DoD to operate more efficiently and effectively. These changes call for the US to have a more flexible, rapidly deployable force.

DoD can not do business the same old way. The combination of factors above requires significant improvement in logistics as laid out in Joint Vision (JV) 2010.² Future logistics operations in support of the force projection military must be linked at the strategic, operational, and tactical levels of logistics, from the source to the user (factory to foxhole). A single seamless supply chain management system would enable proper requisition, receipt, redirection, maintenance, distribution, and retrograde within a single distribution system.

Reengineering of the logistics system is required to keep pace with the RMA and achieve the goal of focused logistics outlined in JV 2010. The challenges - keep useful practices - shed inefficient methods - establish new ways of doing business where needed. DoD must establish a framework for logisticians to improve the current distribution system and develop a supply system capable of supporting the full spectrum of US military operations. This will require innovative doctrinal approaches, reengineered combat Service support (CSS) organizations, highly trained people, advanced technology and sophisticated dedicated communication systems.³

This paper examines whether it is feasible to replace the current cobbled together DoD supply system with a commercially available single, seamless, supply chain management system. It takes a look at the current initiatives and who's in charge of them. The issue -- Can the Services work together to achieve "focused logistics" and develop an effective distribution based supply system that reduces

resource requirements and shrinks the size of the logistics footprint? Or, are OSD and the Services doomed to nibble around the edges and continue to suboptimize the potential improvements that can be gained through effective use of technology so adroitly called for in JV 2010? A review of the current repair parts (class IX) distribution system (depot to user), emerging DoD initiatives and the latest trends in commercial supply chain management systems/software will be the backdrop of the assessment to examine the feasibility of replacing the current DoD system with a single seamless system that can be acquired commercially.

BACKGROUND

As we progress through the Revolution in Military Affairs (RMA) and reengineer military logistics, the defense logistics community is challenged to do business better, faster and cheaper than before. To meet the challenge of JV 2010 and achieve focused logistics, logisticians must reengineer the supply chain and take advantage of developing technologies to dramatically improve processes. JV 2010 was developed to leverage technology and achieve new levels of effectiveness. Its four operational concepts—dominant maneuver, precision engagement, full-dimension protection, and focused logistics—aim to achieve dominance across the entire spectrum of conflict. Focused logistics is the fusion of logistics information and transportation technologies for rapid deployment and sustainment, the ability to track and shift equipment and supplies, and deliver tailored sustainment directly to the warfighter.

Focused logistics requires logisticians to understand the supply chain from end-to-end and to more fully examine the big (joint) picture vice maintaining functional or Service stovepipes. It integrates information and technology to reduce the logistics footprint and provide more agile, deployable sustainment around the globe. Developments in automatic identification technology (AIT) integrated into automated information systems (AIS) that interface with industry will enhance automated tracking of assets throughout the world and will reduce logistics response time (LRT) and lead to a streamlined logistics system. Initiatives such as Joint Total Asset Visibility (JTAV), Intransit Visibility (ITV), Movement Tracking Systems (MTS), and the Global Combat Support System (GCSS) will help provide deployable, automated information systems for leaner, more responsive distribution based logistics.⁶

Distribution based logistics, one of the key elements of focused logistics, capitalizes on technology and commercial business practices to enable CSS operators to maintain total situational awareness and substitute velocity for mass to provide critical supplies to the right place, at the right time, and in the right quantity. The concept synchronizes material and movement management at all levels of operations to ensure optimal utilization of limited transportation resources. When achieved, logistics organizational structures will be streamlined as the logistics footprint is right-sized and genuine progress

is made in distribution. The desired end state is full spectrum supportability. That is support to the warfighter from a source of supply (factory/depot) to the point of need (foxhole) via a single, seamless supply system, while maximizing the benefits of information superiority and technological innovation.⁸

A single (seamless) supply system is a concept for an integrated supply management information system that addresses the coordination requirements to focus logistics support. The key measure of effectiveness of 21st century operations will be reliable, seamless support with a leaner systems architecture that anticipates needs through real-time situational awareness. Use of commercial best practices and processes and technological systems will make supply support fundamentally different, more agile and more efficient than the reactive system of today. The key measure of effectiveness of 21st century operations will be reliable, seamless support with a leaner systems architecture that anticipates needs through real-time situational awareness. Use of commercial best practices and processes and technological systems will make supply support fundamentally different, more agile and more efficient than the reactive system of today.

A reengineered supply system is needed to achieve the goal of focused logistics called for in JV 2010. The strategic capabilities to support the improvement that DoD requires are assured/dedicated communications, real time information, accurate customer data, reliability and speed. Additionally, logisticians must be able to support the warfighter in remote geographic locations, without build-up of

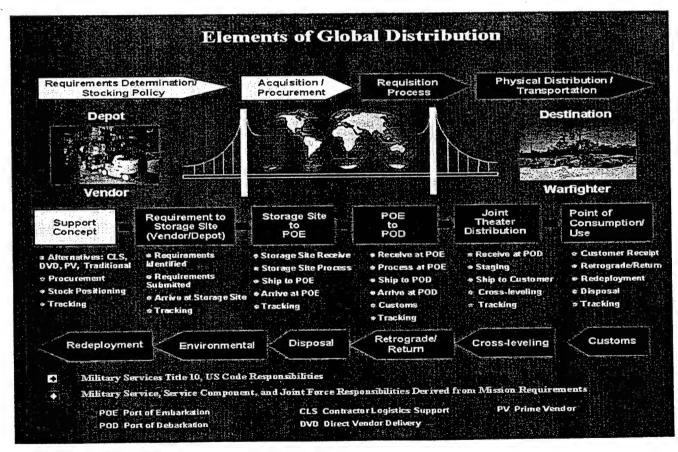


Figure 1

supplies, at lower cost, with a reduced logistics footprint, and do it better than ever before. A supply chain management system for global distribution, utilizing the latest technologies, is an essential ingredient to achieve that goal. Figure 1 (previous page) shows the elements of global distribution.

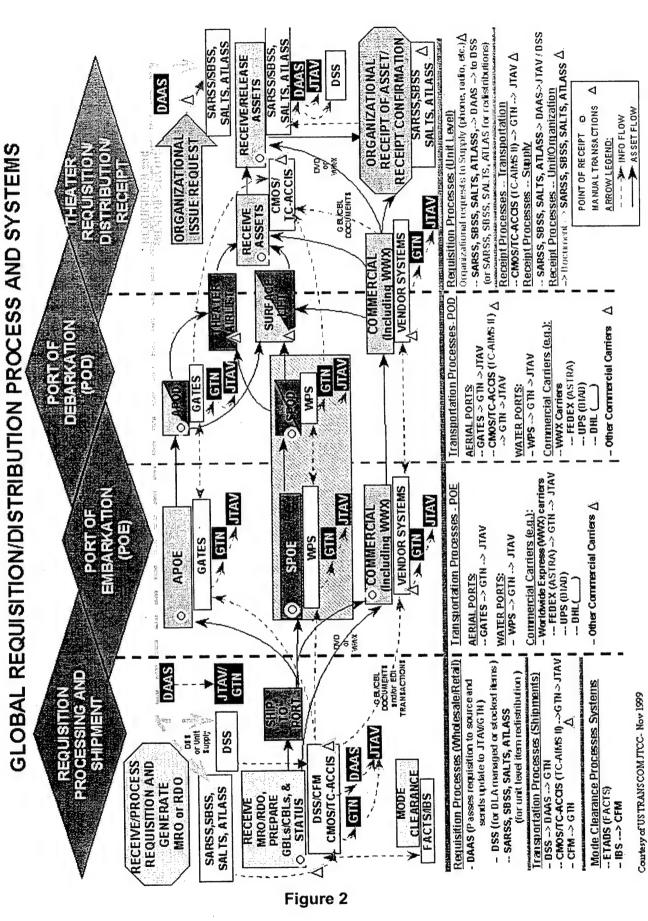
CURRENT SUPPLY SYSTEM

The military logistics system consists of a group of functional subsystems. The most effective and efficient system is flexible, changeable and balanced to meet shifting priorities and needs. Good management dictates that the military supply system be viewed as a whole. Management knowledge provides the best ways to achieve this result and to control the activities within the system. ¹²

"A system is defined as an array of components designed to accomplish a particular objective according to plan. The systems theory includes the systems philosophy (a way of thinking); systems management (the integration of operations through design of the organization and the relationships of its parts); and systems analysis (efficient use of resources to achieve objectives)." ¹³

The current supply system is extremely complex, convoluted and cumbersome. DoD continues to operate a supply system that was designed in the '50s & '60s. Additionally, the system has been tweaked and tinkered with, in attempts to improve effectiveness resulting in a maze of over 500 different systems being linked into the process. ¹⁴ Figure 2 (next page) depicts the current "as is" requisition/distribution network. It is an array of disjointed processes and systems that add to its complexity. The triangular symbols in the chart represent disconnects in the process where manual entries to bridge system incompatibilities are required. ¹⁵

Remarks made by The Hon. Jacques S. Gansler, Under Secretary of Defense (Acquisition and Technology) to the Council of Logistics Management in Anaheim, California on October 14, 1998 highlight the need to improve the current system. A synopsis of his comments reveals that the current logistics system uses processes designed in the 1950s, has a logistics infrastructure that is sadly outdated, does not provide the required performance, costs too much and takes too many people. The current system costs over \$80 billion per year and consists of 13 inventory control points and 24 distribution depots. It has an active inventory of about five million national stock numbers and a secondary item inventory valued at \$64 billion with an annual inventory management cost of \$4 billion per year. The system is



supported by over 500 different logistics information systems that process over two billion transactions a year at a cost of around \$1.5 billion. The current information technology (IT) core transaction systems were built in the mid-60's, in 80-column card format and a typical requisition flows through two dozen handling points. Dr. Gansler also states that funding for logistics-related activities takes up one-third of the total DoD budget and nearly one-half the Department's total manpower. From the time a warfighter needs an item to the time it is delivered to him takes an average of 36 days with some back-ordered items exceeding two years! Therefore, a reengineered system is needed to re-invent the supply process, so that it focuses attention on satisfying the warfighter's requirements.¹⁶

Repair Parts - Class IX Supply Process. Class IX includes all types of repair parts, except medical equipment parts, the most intensively managed class of supply. Each unit deploys with an allowance of Class IX materiel calculated to support unit equipment, for a predetermined period. Higher echelon units possessing more comprehensive maintenance capabilities stock greater range and depth of repair parts. This investment in consumer-level repair part inventories is a major Service operating expense. Efforts to reduce these costs have resulted in unit allowance decreases based on revised maintenance strategies and/or improved methodologies for determining the optimum repair part inventory mix to attain prescribed weapon system operational availability. The implication of this reduced unit stock is increased volume and velocity demands on the global distribution system to support joint forces.¹⁷

Appendix A contains a detailed process overview for distribution of Class IX materiel.

In the summer of 1996, the Defense Science Board, at the request of OSD, conducted a study of the responsiveness of the DoD Logistics System. They compared DoD's performance to that of several private sector, international US corporations operating in similar fields as the DoD Services and Agencies. Figure 3 clearly demonstrates that private industry has better figured out how to more effectively provide supply customer support. It also shows that DoD operated logistics activities are in desperate need of improvement and that their utility is clearly in question. ¹⁸

<u>DoD Logistics</u> Large Opportunity for Improved Performance Lower Cost

Process	DoD	Commerc	cial Companies	
DISTRIBUTION (for in stock items)	26 days (DoD average)	1 day (Motorola)	3 days (Boeing)	2 days (Caterpillar)
REPAIR (cycle time)	4-144 days (DoD average)	3 days (Compaq	14 days (Boeing Electronics)	14 days (Detroit Diesel)
REPAIR (shop time)	8-35 days (Army tank/truck)	1 day (Compac)	10 days (Boeing Electronics)	5 days (Detroit Diesel)
PROCUREMENT (administrative lead time)	88 days (DLA)	4 days (Texas Instruments)	0.5 days (Portland General)	Minutes (Boeing, Caterpillar)

Defense Science Board, 1996 Summer Study

Source: RAND, Others

Figure 3

A supply chain management system is a key ingredient to reinventing defense supply as it would provide an end-to-end system to control the supply process and provide total asset visibility from initial point of distribution to the ultimate consumer. Figure 4 is a depiction of a synchronized supply chain.¹⁹

Synchronized Supply Chain

The supply chain can be viewed as a series of integrated enterprises which must share information and coordinate physical execution to ensure a smooth, integrated flow of goods, services, information and cash through the pipeline

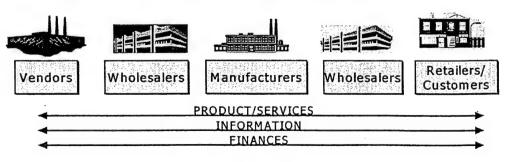


Figure 4

Significant cooperation among Services and Agencies will be required to attain a single seamless system.

WHY CHANGE - WHY REENGINEER THE SUPPLY CHAIN?

Dr. Michael Hammer, noted management author, sees reengineering the supply chain as the key to improving efficiency and effectiveness in the new millennium.

"Supply chain means everything that happens to fill the demands of the ultimate customer. That means all the work that is done by everybody who is contributing to the product and Service that leads to the final customer. One of my favorite definitions is from a company in the tissues business that defines the supply chain as 'from stump to rump'."²⁰

The supply chain is a different kind of process that does not exist within the walls of a single entity. By its nature, supply chain is an inter-organizational endeavor. It does not end with just getting the item to the depot or to a port. It extends from the factory to the distribution node, to the port of embarkation to the port of debarkation, to the transporters, to the general support node, to the direct support node, to the motor pool, to the mechanic. The supply chain is a set of functions that need to be performed coherently by a number of activities. Right now, different tasks along the DoD supply chain are done by different activities and organizations at arm's length from each other.²¹ Teamwork and unity of effort are essential. It should be no more difficult for a Marine to get something from an Army supply unit than it is for him to get it from a Marine Corps warehouse.

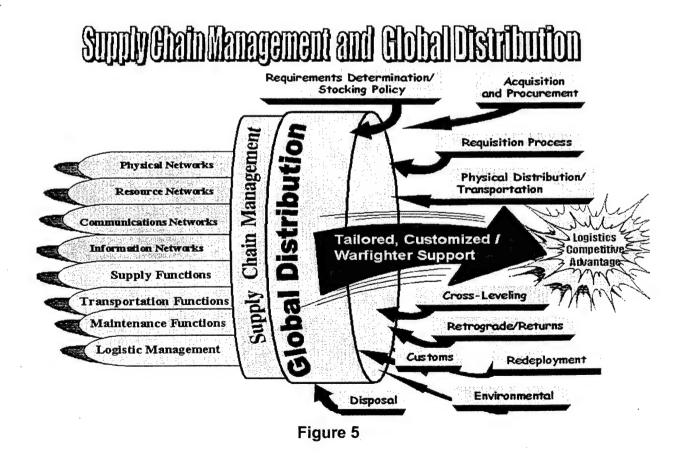
Why should DoD reengineer the supply chain? -- Simple, DoD should reengineer its supply chain to streamline performance, improve customer satisfaction, and lower costs. If the Services and Agencies can work synchronously among themselves and with customers and suppliers, they can eliminate redundant work, save money, improve asset utilization, shrink work in process, and reduce inventory. The elimination of inventory will serve to shrink the logistics footprint and reduce strategic mobility requirements. This will in turn lessen the burden on limited lift assets, unencumber the supply pipeline with materiel to build inventory and speed the process. Most importantly a reengineered supply system will facilitate asset visibility and provide better support to the warfighter. Ultimately DoD can trade velocity for mass or in other words trade information for inventory to achieve the tenets of focused logistics while reducing the cost of support. The reengineered supply chain would then become a key enabler to full spectrum dominance that provides strategic responsiveness to maneuver elements by getting them the right stuff, at the right place, at the right time. That in turn would give the battlefield commander the confidence to know that their requirements will be met enabling them to move lighter and focus on their mission. ²²

"ADVICE – Regarding supply chain reengineering – First, if you haven't already started, you're behind. Second, you must push the envelope. Merely replicating in 2000 what someone else did in 1996 will not work. You must go beyond, look for new ways to speed cycle times, cut costs, improve asset use, and add more value to the customer." ²³

UNDERSTANDING SUPPLY CHAIN MANAGEMENT

A supply chain is a network used to deliver products and Services from raw materials to end customers through an engineered flow of information, physical distribution, and funds. Supply chain management oversees the enterprise relationships to run the business, to get product delivered, and to transfer the funds that run the business. Supply chain management looks at the enterprise as a whole.²⁴

The objective of effective supply chain design is a seamless flow of information, physical distribution, and funds for the benefit of the end customer. The logistics partners achieve efficiency/cost effectiveness through their ability to work together because each partner is dependent on the other. Synchronized cooperation and leveraged use of the resources will achieve economies of scale, reduce redundancy, improve asset visibility and reduce cost. Supply chain management increases customer Service while increasing return on investment.²⁵ Figure 5 graphically depicts the ingredients in a supply



chain management system for global distribution. ²⁶

DoD's supply chain will be more effective when it simplifies business processes, reduces the number of parties who touch a process, and speeds up the velocity of information.²⁷ Again, note the complexity of the existing supply system as illustrated by the requisition/process diagram at figure 2. Reducing the number of supply chain nodes can slash costs by consolidating volume and reducing the number of routings. Capturing accurate, high-velocity information at the point of demand replaces the need to keep every NSN in inventory at every warehouse²⁸ (Velocity for Mass).

Bottlenecks or gaps caused by any link in the chain disrupt the entire supply chain. The supply chain achieves its best throughput performance when each of the partners match supply with demand. Performance must be measured globally. A supply chain transcends each department, the organizational structure, the business climate, and even the culture. Too often, performance measures continue to be strictly defined in terms that optimize local operations and reward individual performance. For a set of supply chain partners to bring their operations into alignment for high-performance, all parties must agree on the global performance measures. Trust among the partners and relationships across organizational lines are critical. For a supply chain to achieve maximum efficiency, every partner must embrace the principles of supply chain management. The partners must also follow these tenets:

- 1. Minimize the number of nodes that define the supply chain; the business processes should be simplified and streamlined.
- 2. Build the forward and reverse (retrograde) supply network around relationships with preferred carriers and maximized routings.
- 3. Strive to synchronize supply to actual demand and understand that the weakest link in the supply chain will govern throughput.
- 4. Agree to a set of global performance measures defined from the customer's perspective (i.e. customer wait time). ²⁹

When understood well, and put to work correctly, supply chain management recognizes this basic fact: The fortunes of a single partner, which is but one link in the chain, depends upon the sustained performance of the other partners in the chain.³⁰

ONGOING PROJECTS AND PROGRAMS

DoD undoubtedly needs a system that is more responsive, flexible and precise with participation jointly among all the Services, Agencies and with the civilian sector to take advantage of best business

practices, commercial economies and advanced global networks. At this stage nearly all of the Service and Agency major logistics activities are striving to design, develop, and demonstrate their own prototype system. They're also using advanced technologies, software tools, and protocols in attempts to realize efficient and effective real-time control of the supply pipeline and put the right materiel, in the right place and the right time in support of the warfighter. However, they are not working in unison!

- OFFICE OF THE SECRETARY OF DEFENSE (OSD) & JOINT STAFF INITIATIVES --
 - OSD ADUSD(L) Supply Chain Integration is an OSD initiative under the Assistant Deputy Under Secretary of Defense Logistics (ADUSD(L)). Its intent is to guide the transformation of DoD's logistics system into a fully integrated supply chain based on assured accountability and timely, accurate satisfaction of customer needs. The mission of the Supply Chain Integration staff is to lead the implementation of a modern, integrated materiel supply chain process that fully supports military operational requirements. It is also tasked to promote customer confidence in the logistics process by building a responsive, cost-effective capacity to provide required products and Services.³¹
 - Joint Staff J4 The Joint Logistics Warfighting Initiative (JLWI) is an OSD / Joint Staff initiative for Fiscal Year 2000/2001. The JLWI aims to explore options for streamlining or flattening the Services' deployment, requisition, distribution, retrograde, and redeployment processes. The Commander-in-Chief, U.S. Central Command (USCINCCENT) was designated the exercising CINC. The initiative is sponsored jointly by DUSD(L) and the Joint Staff (J-4). It is a pilot program where USCENTCOM component units participate as subjects for experiments by providing feedback regarding present and proposed deployment / redeployment and sustainment processes. The scope of the JLWI initiative will include the complete supply chain from CONUS-based sources of supply, to intermediate supply activities, through forward-based units to selected units exercising in the AOR. Key supply, maintenance, transportation, and financial nodes throughout the supply chain will be evaluated. Reengineering of national level logistics processes will be tested while experimenting with web-based requisitioning. The JLWI effort will address all classes of supply however, the main focus of the initiative will concentrate on the consumable and reparable spare parts (Class IX) for selected weapons systems.32

DEFENSE AGENCY INITIATIVES

- DLA The Strategic Distribution Management Initiative (SDMI) is a joint effort by US Transportation Command (TRANSCOM) and the CINCTRANS and Defense Logistics Agency (DLA) in consultation and coordination with the military Services and other defense Agencies, to improve DoD's end to end distribution system. SDMI provides a senior level forum for coordinating joint distribution process improvements in the current distribution system. Its objectives include: analysis of the distribution processes to recommend new processes to integrate the supply chain and analysis of strategic distribution requirements to optimize supply chain performance. SDMI also examines predictive delivery, forecasting, and integration of vendor and contractor shipments into the defense global distribution system to identify opportunities for use of commercial distribution technologies and processes. The end product will be a recommendation for key distribution metrics that capture end to end customer wait time (CWT). Additional key objectives are to demonstrate the need for end-to-end SCM and to identify opportunities to integrate the SDMI with related distribution process improvement efforts such as the Joint Theater Distribution Joint Test and Evaluation (JT&E) also known as JLWI, Velocity Management, Lean Logistics, and Precision Logistics programs.³³
- DARPA -- The Defense Advanced Research Projects Agency (DARPA) and DLA have jointly sponsored the Advanced Logistics Project (ALP), a five-year initiative to pursue the development of advanced technologies to make quantum improvements in military logistics. It is being developed in cooperation with the Joint Staff/J4 and the US Transportation Command. The principle objectives are to design, develop, and demonstrate an end-to-end prototype system using advanced technologies, software tools, and protocols to realize efficient and effective real-time control of the logistics pipeline and to put the right materiel, in the right place and the right time in support of the warfighter. Key segments of the project pertinent to this paper are -- End-to-End Movement Control and Rapid Supply. End-to-End Movement Control is improved management of the transportation / logistics pipeline through the automated development of responsive transportation plans, schedules, and continuous monitoring techniques. Rapid Supply is designed to maintain interoperable connectivity and access between all of the DoD logistics activities and commercial vendors, suppliers, and manufacturers to increase material readiness, decrease cycle times, satisfy material requirements, and reduce DoD inventory and overhead costs.

SERVICE INITIATIVES

- Army –Started a Revolution in Military Logistics (RML) as a major component of Army and DoD efforts to transform logistics operations and reduce costs. The Army transformation process purpose is to redesign the supply process with Single Stock Fund and the supporting automation through Global Combat Support System Army (GCSS-A) and other initiatives such as Velocity Management and the AMC Logistics Modernization (LOGMOD). The Global Combat Support System-Army is to be the tactical and business automation enabler for the Total Army combat Service support (CSS) mission area and will constitute the Army portion of the Global Combat Support System--a joint system-of- systems. Velocity Management is an Army wide effort supported by DLA to speed the process of repair parts distribution to allow velocity to replace mass and thereby reduce the levels of inventories required at posts, camps and stations. LOGMOD, a \$680 million ten year contract to outsource Army wholesale supply systems, will modernize the current logistics systems to enable them to become more responsive, flexible, and cost effective.³⁵
- <u>Air Force</u> The Air Force and its materiel command (AFMC) have embarked on the Supply Chain Management Initiative (SCMI). This is a 5 year effort to educate and equip Supply Chain Managers (SCMs) to operate effectively in a fast moving Expeditionary Air Force (EAF) support environment. SCMI looks at the supply chain holistically (end to end) and has an objective to identify gaps in capability and constraints caused by lack of resources, other inhibitors and duplication of effort. An SCM Working Group of the Air Logistics Centers, DLA and the Air Staff, has been established to manage this initiative.³⁶
- Navy The Department of the Navy is presently pursuing 25 initiatives under their High Yield Logistics Strategy. Their strategy addresses three improvement goals: enhancing customer support, reducing total ownership costs, and reducing infrastructure. Their strategy also recognizes the relationship of these initiatives to the four principles of supply chain management. Initiatives include -- Relational Supply (R-Supply), Organizational Maintenance Management System Next Generation (OMMS-NG), Optimized Naval Aviation Logistics Command Management Information System for Intermediate Maintenance Activities (NALCOMIS IMA), Relational Administrative Data Management System (RADM)³⁷ and the Organic Industrial Enterprise Logistics Support. All are designed to streamline the Navy logistics process through reduction of inventory, lower total cost of the supply chain, and reduced repair costs.³⁸

• Marine Corps – The Marine Corps logistics improvement thrust is being made under the mantle of Precision Logistics. Some elements being pursued are: Activity Based Costing (ABC) - to cut spending and promote customer satisfaction; Performance Standards and ISO 9000 - comprehensive documentation of all procedures, eliminating unnecessary steps, improving quality with repeatable and predictable steps, and removal of variation through standardized procedures to yield operational efficiency and higher productivity. Supply Chain Management is also being pursued to give management the ability to plan versus react.³⁹

There are numerous other initiatives underway by the Services and Agencies. These few serve as an example that significant effort and funds are being expended in efforts to improve the DoD logistics support systems. All parties are making concerted efforts to speed processes, reduce costs, shrink inventories, add information technology, and provide better, faster, cheaper support to the warfighter.

COMMERCIAL SUPPLY CHAIN MANAGEMENT SYSTEMS

Industry has been reinventing itself to create virtual supply chains across the Internet. A Supply Chain Management (SCM) System is an integrated suite of software modules that automates internal "back office" operations for each function within an organization, such as manufacturing, distribution, financials, purchasing, sales and human resources. The biggest vendors (SAP, Oracle, PeopleSoft, J D Edwards and Baan) have served their customers by integrating business processes and management information systems from one end of the organization to the other to achieve a competitive advantage and more efficient processes.⁴⁰

Information Technology (IT) and Information Systems (IS) are the driving forces that will enable organizational and systemic changes in supply support. Internets, Intranets and client-server networks allow a robust worldwide communications system to provide managers with near real-time, high fidelity information to make the complex decisions.⁴¹

Emerging IT/IS technologies will provide information that is more accurate, more complete, and more analytical that allows visibility of all levels of the organization. This information will enable delayering and the elimination of middle managers. Delayering will enable the elimination of redundant or unnecessary nodes in the supply chain and allow for more streamlined material flow. Organizations that effectively employ supply chain management are able to replace inventory with information and shrink their infrastructure requirements.⁴² A manager that knows where his material is and has confidence that the supporting distribution community (supply chain) can make time definite deliveries will have the confidence to streamline processes and reduce inventory for more effective operations.

World-class commercial firms have shifted their focus from holding significant amounts of "just in case" inventory to rapidly and reliably satisfying customer requirements. They have evolved to integrated, customer-driven, supply chain management. This change has effectively freed up significant additional resources (billions of dollars a year) for modernization and capital investment; while, at the same time, achieving far better support to the customer. Key supply chain reengineering initiatives of today reflect the efforts and "lessons-learned" of world-class companies that have retooled their logistics processes into competitive, strategic forces. Successful firms (such as FedEx, Caterpillar, and Wal-Mart) have dominated their market segments and reduced costs by focusing their supply chains on customer Service and customer-driven requirements. In the process reengineering area, world-class companies have been successful by focusing on specific customer needs. Those needs are then channeled back through the supply chain to define customer-driven metrics at each echelon. 43

Six major types of planning and execution software make up supply chain management (SCM) software. The six are enterprise resource planning (ERP), supply chain planning (SCP), order management systems (OMS), warehouse management systems (WMS), manufacturing execution systems (MES), and transportation management systems (TMS). Until their merger as SCM software they merely handled their own stovepiped piece of the supply chain with few if any links to other types. The six software types operate as follows:

- ENTERPRISE RESOURCE PLANNING (ERP) A planning tool for management of planning and execution subsystems. Modules include financials, purchasing, and other administrative functions.
- SUPPLY CHAIN PLANNING (SCP) Used to plan and schedule distribution and warehousing with modules ranging from demand and inventory planning to supply chain network design. Can shift inventory at the right price and right time to the right jobs.
- ORDER MANAGEMENT SYSTEM (OMS) The bridge between planning and execution to manage the relationship between company and customer. It receives, validates, processes, prices, prioritizes, expedites, and invoices customer orders.
- MANUFACTURING EXECUTION SYSTEM (MES) Integrates information from ERP and SCP systems with the flow of materials, work-in-process and production, compensates for shifts in production, inventory levels, order priorities, and labor.

- WAREHOUSE MANAGEMENT SYSTEM (WMS) Manages inventory, order fulfillment, materials
 handling equipment, and labor in the warehouse or distribution center, and controls activities from
 receiving to shipping.
- TRANSPORTATION MANAGEMENT SYSTEMS (TMS) Manages inbound, outbound, and intracompany shipments in the transportation network to reduce shipping costs. Functions include labor management, load planning and building, and shipment scheduling.

The combination of these systems in a central management and database program form very powerful SCM software used to operate the supply chains of today's most successful, profitable and progressive companies.⁴⁴

Commonly known as visibility software, SCM packages provide a framework that allows shared data with other organizational nodes at any location. As a result, the inventory and orders are visible to all across the supply chain. Manugistics, one of the leading SCM suppliers, offers these three real-world results. Chemical giant Rohm & Haas increased on-time shipments from 85% to 96%. Yogurt maker Dannon's improvement resulted in increased inventory turns by 30% and reduced inventory levels 25%. Pharmaceutical supplier Glaxo Wellcome increased customer Service levels from 97% to 99.5%.

High performance software solutions for e-business enable [theoretically] companies to move to a zero inventory / 100 % visibility business model by replacing inventory with information to speed the movement of goods through the supply chain. One of the most important drivers of customer service is high product availability at the point of use. Research studies show that forecast-based replenishment achieves inefficient out of stock levels of approximately 10 % and that merely improving product availability at distribution centers does not necessarily translate into product availability to the buyer. 46

IBM and Industri-Matematik International Corp. developed a SCM solution to increase on-shelf product availability. The program provides a pull system (vice push) where replenishment is based on actual consumer use rather than forecasted demand. This replenishment model allows improved customer Service and product availability (readiness) while minimizing inventory investment (velocity over mass) and operating expenses (smaller logistics footprint). It combines components of supply chain software and applications for e-business. The solution is designed for high-volume, automated environments and requires minimum human intervention. The package uses web technology to provide decision-makers with timely, easy-to-access information to monitor and manage in real time. These capabilities align replenishment activities with the rapid, unpredictable consumer demand.⁴⁷

Supply-chain management tools have a dramatic effect on performance as they juggle a huge number of factors throughout the enterprise and among business partners that affect material supply, production, distribution, and demand. Business managers can find answers to questions such as volume, source, inventory, and transportation options. Supply chain management systems can provide exceptional return on investment (ROI), ranging from 100% to 300%. SCM software helps improve ontime delivery rates (95% is a norm) through better scheduling to meet demands from partners and customers. The tools in SCM packages analyze order entry, replenishment, purchasing, warehousing and inventory, and accounts payable. They reveal patterns in the flow of supplies and demands while providing accurate estimates for events at points in the supply chain, such as time to deliver, backlog, demand trends, and inventory. Before many companies implemented supply-chain management tools, business managers guessed at requirements and they often guessed wrong because they were ill informed. While SCM tools deliver plenty of benefits, they aren't cheap. A company with \$1 billion in revenue might spend \$10 to \$15 million on a system. The biggest part of that expense is for business process development and employee training. However, with effective product selection, process reengineering, and employee training it is possible reach 300% return on investment.

Critical to effective supply chain management is the efficient employment of IT/IS. To be successful in the 21st century, industry must embrace the IT/IS opportunities that enable SCM systems to transform organizations into "virtual enterprises". Linking the processes of manufacturers and suppliers via Internet technology is essential to quality SCM implementation. Streamlined distribution practices mean that the supply chain will need real time information and seamless integration of their business processes. Incorporation of IT/IS in the form of web-based electronic business will produce cost reductions across the entire supply chain. And, it will allow time savings by optimizing processes, automating financial transactions and enabling companies to react more quickly to demand and supply issues as well as changes in the situation.⁴⁹

Adopting a web-based SCM system can be a daunting task. This four-step adoption model helps organizations understand how to do it.

- Step one is Information -- Use the web to distribute information such as contacts and product information.
- Step two is Interaction Use the web to enable the organization to interact with customers or suppliers.
- Step three is Transaction -- Perform business transactions over a network (i.e. place orders).

 Step Four is Transformation. Adapt organization processes to the new channels enabled by electronic commerce.

Clearly the final step is the most difficult and time consuming. It is also essential to achieving the quantum operational improvements offered by integrated, web based, supply chain management practices.⁵⁰

ASSESSMENT

The joint logistics challenge is to build a common business process to improve the responsiveness and manageability of supply support at every level that links with Service supply operations to provide a fully integrated DoD logistics business process. Accomplishment of this challenge will take a lot of complicated work. It will require a joint effort and demand participation from top to bottom in a well-coordinated, well-integrated effort.⁵¹

Logisticians should realize that the tenet of focused logistics, as much as it brings logistics to the forefront of the National Military Strategy, also clearly identifies logistics as a key "bill payer" for the attainment of full spectrum dominance. Therefore, the logistics community must improve its processes and performance and reduce its cost of doing business or risk becoming obsolete.

As has been described throughout this paper, the DoD undoubtedly needs a logistics system that is more responsive, flexible and precise. Participation jointly among all the Services, Agencies and the civilian sector is required to take advantage of best business practices, commercial economies and advanced global networks. Coordinated improvements will simplify supply processes, improve support to the warfighter, reduce costs, and allow elimination of nodes along the supply chain. Ultimately improved practices and systems will allow flattening of logistics organizations, reduce the number of people involved in logistics support and enable a reduced logistics footprint on the battlefield. The current DoD system is outdated. It is filled with inefficient processes and systems that are too expensive and that prevent initiatives such as modernization and re-capitalization from being resourced. As such, DoD needs to reengineer logistics processes and systems through careful application of information technology and adaptation of best business practices.

The defense supply chain is the biggest in the world. It costs over \$80 billion a year to operate and processes over 2 billion transactions annually. Sadly, it is encumbered by over 500 separate systems that still use a system of processes designed in the '50s & '60s.⁵⁴ To make the necessary improvements, DoD must...

"dramatically reinvent its logistics processes, abandoning the "mass metal" model of the 20th Century and moving to a highly flexible, "lean" model for the 21st Century. To accomplish this, we must build upon the recent logistic successes of world-class commercial firms and their focus on rapidly and reliably satisfying customer requirements. Our objective is to evolve to an integrated, warfighter-driven, secure supply chain through four key initiatives:

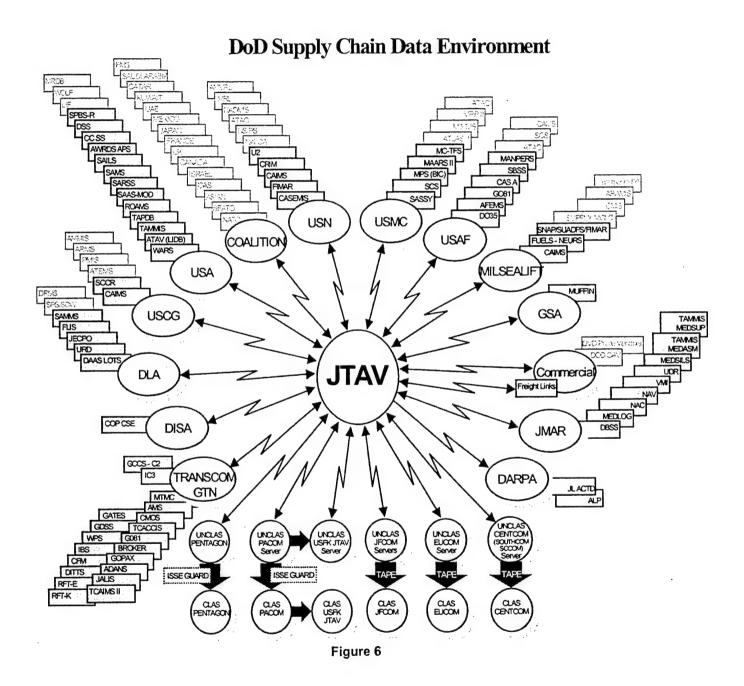
- 1) Totally reengineer the logistics processes to improve customer Service -- including velocity, accuracy, reliability, and security -- assuring rapid and assured supply at much lower costs;
- 2) Dramatically reduce the in-theater footprint, via use of smart weapons, confidence in supply, rapid transportation, highly reliable equipment, reduced fuel consumption, and enhanced field maintenance procedures;
- 3) Downsize the infrastructure through reduced logistics personnel (military and civilian) along with fewer facilities and inventories -- and aim for a system that efficiently and effectively goes from factory to foxhole; and
 - 4) Implement a modern, secure, reliable, integrated information system."55

In 1995 DoD crafted its Logistics Strategic Plan (LSP) and since has updated it a couple times. The plan calls for the reengineering of the defense logistics system to work towards the aforementioned goals. In 2000, it is clear that the senior logistics leadership understands that improvements are a must and at this stage all the Service and Agency major logistics activities are striving to design, develop, and demonstrate their own variation of an end-to-end prototype system. They're using new technology and software tools to craft more efficient and effective control of the logistics pipeline and to put the right materiel, in the right place and the right time in support of the warfighter. However, they are not working in unison!

The Services and Agencies are independently or with limited joint partnerships wading through the current convoluted system. But, their efforts suboptimize the improvement potential as they are working in stovepipes and refining, automating and fine tuning only disconnected portions of the supply chain. For the past 40 years this has been the method of operation and DoD continues to operate under a supply system that was designed 40 years ago. Since its inception the system has been tweaked and tinkered with, in attempts to improve its effectiveness resulting in a maze of different disjointed subsystems. Figure 6 (next page) is a descriptive view of the monster that has been created. The Services and Agencies must work together to solve this problem.

The General Accounting Office (GAO) evaluated the DoD Logistics Strategic Plan (LSP) to ascertain its probability of success. GAO reported that though the plan gives direction needed to improve the logistics system and reduce its costs (i.e. reducing logistics cycle times, developing a seamless

logistics system, and streamlining the logistics infrastructure), the likelihood of success would be much greater if the plan was linked to resources. That linkage will remind both DOD managers and Congress



of the value and priority of logistics system improvements before they made funding decisions. The LSP could further be improved if it directed the Services to link their individual Logistics Strategic Plans to the DoD plan. Finally, GAO suggested that DoD identify interim approaches that can be developed and implemented in the event of unforeseen setbacks in the plan execution. A critical point --

DoD's success in achieving the goals of its LSP (focused logistics), enabling the attainment of full spectrum dominance called for in JV 2010, hinges on the strong, involved, continued and visible support of DoD's top managers/leaders. The biggest hurdle will be removal of institutional cultural barriers.⁵⁷

A closer relationship between participating activities is required in reengineered supply chains and that means sharing sensitive information. Information is a substitute for inventory. Information technology is the enabler for reengineering. The key to allowing entities to integrate across organizational boundaries is sharing information, which is achieved by IT. In DoD there must be trust that goes across Service and Agency boundaries. This is essential to breakdown the cultural barriers that cause Service "unique" stovepipe approaches to modernization and improvement.

The Services and Agencies work together better today than at any time in the past yet there is still a tremendous chasm. Title 10 and DoD 5100.1 place the responsibility to man, train and equip with the respective Services (see Appendix B for a summary of responsibilities within DoD). However, responsibility does not mean that each Service has to invent its own way of doing it. All DoD operates under the same MILS-Military Standard Logistics System (see Appendix C for details) or as it is now called Defense Logistics Standard System (DLSS). The variations, adaptations and additions to the logistics systems over the years (see figure 6) have been made under this umbrella. The Services all use the same priority system, catalog data, transportation system and carriers, wholesale distribution system, finance offices, and Federal (FAR) and Defense Federal (DFAR) Acquisition Regulations. They also work together under the same plans and orders for contingency operations. Likewise, they must set aside service bias and peculiarities and work together to create the "seamless" system needed to improve the supply chain.

To accomplish the changes needed to achieve focused logistics, change agents need to be at the highest levels and apply IT, process improvement, reengineering, and restructuring in a synchronized manner. We can not apply one or the other and expect the dramatic improvement needed to enable the visibility, velocity, and value that will be required of the supply chain and global distribution on the 21st century battlefield.

A successful reengineering effort needs a leader, a process owner, a reengineering team, and a steering committee. Because supply chain reengineering projects involve multiple organizations, people from each organization are needed because it requires crossing enterprise boundaries. Typically, an executive leader and a process owner from each node are needed as well. The leaders should be senior people with directive authority because behavioral change is expected in the organization, which never comes easily. Asking people to change their attitudes and share information with other Services and Agencies is very counter cultural. ⁵⁸

Most importantly, each Service must be willing to share the benefits of reengineering. One that wants to monopolize the benefits of reengineering will get ostracized because no one will be willing to work with them. Then the entire effort will suffer. There must be benefit for all participants in order to gain the willingness needed to make the massive changes in operations that reengineering demands. Reengineering leads to radical changes in traditional modes of operation. Unless someone at the very top is driving the process, these changes will be lost in the organizational resistance to change, and the reengineering effort will fail. Additionally, the process owner needs to be a highly visible and respected person to demonstrate that reengineering is being taken seriously. A token person does not carry the weight or make the same statement. ⁵⁹

Key principles of supply chain management are unity of effort and a system that provides end to end utility. The most effective supply chain has enterprise wide (end to end) performance metrics focused on customer satisfaction not artificial segmented goals. For the DoD supply chain, end to end is factory or depot to foxhole or ordering activity. Performance should be measured by including the amount of time required to have the order placed and filled or in other words, customer wait time (CWT). CWT is the time from when the order is placed until the materiel arrives at the location submitting the order. Typically, each DoD segment or subsystem has its own set of metrics to measure its performance and that effectively misrepresents supply chain performance. SCM also requires IT and IS to make the considerable improvements envisioned.

However, IT and IS are not used efficiently or effectively in many organizational change initiatives. The same holds true in DoD. A problem with IT implementation, specifically in DoD, is the application of technology (new systems) without updating and/or improving old processes or structures. This suboptimizes potential improvements. Particularly troublesome are the efforts to modernize the DoD supply chain. DoD regularly fails to combine improvements in IT with changes to process and structure as is evidenced by the 500 systems that have been applied to the defense supply system whose processes were fundamentally designed in the '50s & '60s. Again, examine figure 6; each box represents a system and a process with its own performance metrics. An effective change effort can not apply to one or a couple of nodes and achieve the dramatic improvement needed to enable the visibility, velocity, and value that will be required of the supply chain and global distribution on the 21st century battlefield. Achieving a seamless, distribution-based system capability will require a deliberate program of process change AND technology enhancement. If done properly, the end result could be the full realization of reengineered business processes, infrastructure changes, and enabling technologies – a supply chain management system.⁶⁰

"Companies that <u>have not</u> gone through an SCM implementation are functionally oriented. Their businesses are divided into departmental silos where people tend to focus on the performance of their department. SCMs, in contrast, are process-oriented. The benefits of installing an SCM derive from the ability of individuals across an enterprise to share information horizontally. So, migrating to an SCM is often a significant cultural change. Individuals are asked to work cross-functionally toward common enterprise wide goals."

The installation of IT/IS is only one of the requirements for implementing an SCM system. Management, people, processes, structure and IT/IS are all required ingredients in the process. ⁶² SCMs provide excellent return on investment (100% to 300%), if the implementation is performed properly. But, to be successful, the organization must change the way its works. Several steps should be followed for successful SCM implementation: 1) assemble a team of representatives from each segment; 2) critically evaluate each process; and 3) decide whether to retain, change, combine or eliminate each process. An in-depth understanding of the jobs they must perform across the organization, as a whole, is essential for success. ⁶³

The recent and expected evolutions of supply chain management software are as follows:

1998-2001 -- Developmental efforts focus on linking and integrating each of the six software types to create packages that deal with the supply chain as a continuum rather than in individual stages. However, each of the six continues to maintain its pre-existing identity.

2001-2004 -- Once all six of the current software types have been integrated, their names are likely to remain for a short time as a reflection of the level of integration achieved.

BEYOND 2004 -- Fully integrated supply chain management software packages will perform all key planning and execution functions needed to take time, cost, and labor out of the supply chain. ⁶⁴

The following four principles can be used to guide supply chain management implementation:

- Build a competitive set of business processes that defines ordering, delivery, inventory, replenishment, returns, and flow of funds.
- Know where the demand is and where the supply bases are located geographically to connect all the origins of supply to all the destinations of demand.

- 3) Match the rate of supply with the rate of demand at each node and maximize end-to-end throughput.
- 4) Performance must be measured globally. 65

For a set of partners to bring their operations into alignment for a high-performance supply chain, all parties must agree on the global performance measures. Trust among the partners and relationship management across Service lines is critical. For a supply chain to achieve maximum efficiency, every partner must embrace the four principles of supply chain management described above. When understood well, and put to work correctly, supply chain management recognizes this basic fact: The fortunes of a single partner, which is but one link in the chain, depends upon the sustained performance of the other logistics partners in the chain. ⁶⁶

DoD is the largest supply chain in the world but it needs modernization and streamlining for greater efficiency. However, DoD is not ready for the massive reengineering necessary to achieve focussed logistics. The senior leadership in the logistics community, to their credit, recognizes the need for improvement. Additionally, all are becoming unified in the language of reengineering and supply chain management. They are leading initiatives that include the right theories, buzzwords and phrases, and they embrace the latest technologies, however, they do not address the enterprise-wide process review and improvement and enterprise-wide restructuring needed to accompany the enterprise-wide IT/IS solutions to improve the DoD supply chain.

The DoD Logistics Strategic Plan effectively outlines the requirements to achieve focused logistics. The Service plans and their resources now should be tied to it to ensure unity of effort. It is going to be a difficult path. The quotes below represent the Service thoughts on the LSP.⁶⁷

ARMY - "Logistics is the lifeblood of any military force. The Army's Revolution in Military Logistics links today's force with that of the 21st century." MG Cannon, Acting Army DCSLOG

NAVY – "Transforming logistics support to maintain readiness while reducing costs is vital to the continued success of our Navy..." VADM Amerault, DCNO for Logistics

MARINE CORPS – "In order to win our nation's battles in the 21st century, we must have an agile and responsive logistics system that will support our future warfighting concept of Operational Maneuver from the Sea." MG Higginbotham, DCS for Installation and Logistics

It is interesting that jointness or single system is not mentioned. Parochialism must be assaulted.

"The way to do this is to find someone inside the enterprise that really wants the new. And then it needs a champion. It needs someone who says — 'I am going to make this succeed' — and who then goes to work on it. And this person needs to be someone whom the organization respects."

The DoD supply chain is such a tremendous enterprise that it would be prudent to approach its reengineering thoughtfully and carefully. As DoD is also specially charged with the defense of the nation it can not take unnecessary risks in reengineering or streamlining. DoD must be capable, at all times, of deploying and fighting to win our nations wars or accomplishing its assigned mission in other small scale contingencies. Logistics and sustainment are vital components of this requirement. DoD can not call time-out to field a new system or time-out to fix a fielded system that doesn't work. Thus, a prudent means of reengineering the DoD supply chain is via experimentation or pilot projects. But, to be more than superficial (i.e. more than a band-aid on a sucking chest wound) the experiment or pilot must be "end-to-end" and involve participants enterprise-wide.

"If the pilot test is successful – if it finds the problems that no one else anticipated but also finds the opportunities that nobody anticipated – the risk of change is usually quite small. And it is usually also quite clear where to introduce the change, and how to introduce it, that is, what entrepreneurial strategy to employ." ⁶⁹

The Services continue to pursue initiatives that are single Service or that consist of minor partnerships. Their stovepipe solutions continue to hang additional software, systems or nodes on the already outdated over-encumbered system without sufficient regard for reengineering the processes or organizational structures at the same time. However, a number of the current logistics improvement initiatives from the joint staff and defense Agencies have promise. Yet, they only go part way toward solving the daunting problem of modernizing such a huge system.

Broad scope initiatives with promise for the development of an end to end supply chain management system are JLWI, SDMI and DARPA-ALP. The scope of the JLWI initiative includes the complete supply chain from CONUS-based sources of supply, to intermediate supply activities, through forward-based units to selected units exercising in the AOR, concentrating on Class IX. Key nodes throughout the supply chain will be evaluated for reengineering of processes and experimenting with webbased requisitioning. SDMI examines predictive delivery, forecasting and integration of shipments into the defense global distribution system; it seeks opportunities for commercial distribution technologies and processes; and an end product will be distribution metrics that capture end to end customer wait time (CWT). Additionally SDMI looks to demonstrate the need for end-to-end SCM and to integrate the SDMI with related distribution process improvement efforts. The DARPA-ALP, in cooperation with the J4 and TRANSCOM is pursuing advanced technologies to improve military logistics. The principle objectives are

to design, develop, and demonstrate an end-to-end prototype system to realize efficient and effective real-time control of the supply pipeline that will put the right materiel, in the right place, at the right time in support of the warfighter.⁷²

A combination of these initiatives has the potential to make considerable progress in streamlining the supply chain and moving toward focused logistics.

CONCLUSION

Joint supply and supply chain management will be required to achieve focused logistics, streamline the supply and distribution system and shrink the logistics footprint. The Services must work together and set aside parochial "rice bowls" to achieve a single seamless system. This is clearly the way to go as has been evidenced by the tremendous strides and advances made by private industry in the recent past. To meet the challenge of JV 2010 and achieve focused logistics, DoD must reengineer its supply chain taking advantage of technological innovations and the development of improved processes. The strategic capabilities required are assured and dedicated communications, real time information, accurate customer data, reliability and speed.

Who is in charge? Senior logistics leaders get the message and are launching hosts of initiatives to work towards focused logistics. A significant problem, however, is that those initiatives attack only segments of the supply pipeline and the solutions, by and large, are not integrated. As such, billions of dollars are being spent each year, independently by Services or in modest joint ventures to try to improve portions or parts of the process. All the Services and Agencies understand and recognize the need to pursue the target articulated in JV 2010. Yet rather than coming together to accomplish the task in a unified manner at the lowest possible cost, the Title 10 shield is raised to keep the Service peculiar efforts on an independent track. Title 10 holds the Services responsible for manning, training and equipping their Service; it does not direct them to do it independently (see Appendix B). With the technology available today a formula for equitable financial contribution by the Services could surely be developed and used. OSD must exercise strong visible leadership and control the Service and Agency expenditures and configurations of logistics improvement initiatives.

Everyone has to participate and logistics system reengineering must include IT/IS, process review and improvement and restructuring. To have even the remotest possibility of success, DoD must take advantage of emerging telecommunications technologies (particularly web based) and stay in constant contact with its customers, suppliers and distributors. Each node in the supply chain must have access to real time information so that inventory is replaced with information. Additionally, the joint

community (all the Services & Agencies) need to drop their parochial approaches to moving toward future requirements. They must genuinely engage in cooperative development of a supply chain management system that takes advantage of commercially available packages and disregards "this is the way we've always done it" approaches to logistics. The quote below sums up how out of control defense logistics has gotten.

"Quite frankly, the first challenge in this area is figuring out how much our current logistics cost. ...the National Defense Panel estimated total logistics costs around \$85 billion. I asked my staff to make its own assessment and, (after almost six months of work), they came up with an overall estimate of \$82 billion a year. Clearly, we cannot manage our logistics costs if it takes us six months to estimate what they are!" 73

The Secretary of Defense through his Under Secretary for Acquisition, Logistics and Technology should exercise directive authority and require the Services to link their logistics modernization efforts to the DoD LSP. A mechanism for controlling resources and establishing configuration control is essential. This doesn't necessitate that Services abrogate their command and control measures or unit integrity. Quite the contrary, directive control over resources and configuration toward the unification of a seamless logistics system would allow the Services flexibility to reconfigure, reengineer and streamline their logistics processes and take advantage of the other Service efforts. Thereby it could reduce the number of resources required to accomplish the logistics mission and free them up for application elsewhere.

Key issues for any system adopted for DoD supply chain management are scalability and flexibility. Scalability is the hardware/software's ability to handle the volume and a wide range of processing demands. Flexibility is the system's ability to accept tailoring and adjusting to accommodate the volatile (i.e. expeditionary) nature of military logistics. SCM is the way ahead as it offers tremendous ROI and opportunities to realize a more streamlined single seamless system. However, commercial SCM is not yet mature enough and has not achieved the level of scalability needed to handle the enormity of the DoD supply system.

The defense supply system is too big and DoD has such an immediate response mission that selection of a full scale reengineering effort with a new system, implemented in a turn-key transition is not practicable. Experimentation and pilot programs are the more prudent approach to assure continued operations along with graduated implementation and testing of emerging technology and processes. For now the best method for determining the utility of SCM software capabilities as part of DoD's logistics modernization is via experiments and pilot programs. By 2006, SCM software will have reached a level of fidelity substantial enough for DoD to include commercial SCM software in its modernization efforts. Industry is not yet ready with a single integrated SCM package capable of handling a supply chain as vast as DoD's. The 5 million lines of supply and 2 billion transactions handled by the DoD supply chain each

year present a tremendous scalability challenge. Dr. Todd Carrico, Director, Advanced Logistics Project, DARPA also support this contention. Future development and testing is required.

RECOMMENDATIONS

"To build on DoD's existing strategic planning efforts and to have a better chance of achieving the major logistics system improvements that its plan envisions, we recommend that the Secretary of Defense direct the Deputy Under Secretary of Defense for Logistics to -- (1) Ensure that future logistics plans include a recognition of the magnitude of the investment that is required to accomplish the plan's goals, objectives, and strategies. (2) Issue specific guidance to the Secretaries of the Army, the Navy, and the Air Force and the Director of DLA instructing the Services and DLA to link their goals and budgets to the DOD logistics strategic plan's overall goals and strategies."

Based on the data presented and the conclusion above, the following recommendations to improve the DoD supply system and to prescribe the use of commercial SCM in the process are offered: Recommend...

- that the OSD engage in directive efforts to move all the Services and Agencies toward a single supply chain management system by linking the Service's and Agency's LSPs and budgeting to the DoD LSP. OSD should also establish a mechanism for configuration control to manage the emerging changes/improvements to the supply system with the intent of curtailing independent Service efforts that are not coordinated with the overarching LSP and its improvement initiatives.
- that OSD require the Joint Staff J4, in conjunction with the Service logistics chiefs and defense Agencies, to launch a DoD logistics reengineering campaign in unison to transform defense supply into a single seamless supply chain. That Service initiatives are examined to ensure that they are contributory to the LSP. That JLWI, SDMI and ALP be combined into a consolidated initiative to achieve end-to-end enterprise-wide experimentation of potential supply chain improvements.
- that DoD continue aggressive pursuit of logistics improvement and make the investment in automated systems to facilitate the development and installation of a single seamless supply chain management system across DoD. Examine the commercial availability of supply chain management systems that can be adopted by all Services and Agencies, and experiment with SCM software, processes and structures during approved improvement initiatives.

- that DoD work with the Services and Agencies on the following tenets: a) Minimize the number of nodes that define the supply chain; b) Build the logistics network around relationships with preferred carriers; c) Strive to synchronize supply to actual customer demand; d) Agree to a set of global performance measures defined from the customer's perspective.⁷⁵

WORD COUNT - 10,040

ENDNOTES

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.

9 Ibid.

¹ Department of the Army, <u>The Systems Approach to Logistics</u>, Field Manual 700-80 (Washington, D.C.: U.S. Department of the Army, 15 August 1985), 6.

² Department of the Army, U.S. Army Training and Doctrine Command, <u>Battlefield Distribution</u>, TRADOC Pamphlet 525-77 (Fort Monroe, VA.: U.S. Department of the Army, U.S. Army Training and Doctrine Command, 2 February 1998), 2-1.

³ FM 700-80, 9.

⁴ William S. Cohen, Department of Defense, <u>Annual Report to the President and Congress 1999 – Chapter 10, The Revolution in Military Affairs and Joint Vision 2010</u> (Washington, D.C.: Office of the Secretary of Defense, 1999), available from http://www.dtic.mil/execsec/adr1999/chap10.html, Internet: 3 April 2000.

⁵ Joint Staff - J4 Projects, Department of Defense "Focused Logistics, Joint Deployment and Rapid Distribution", January 2000; available from http://www.dtic.mil/jcs/j4/projects/foclog/execsum.html; Internet; accessed 10 January 2000.

¹⁰ David Payne, <u>Logistics Integration Agency Background Paper</u>, "An Elaboration on the Revolution in Military Logistics – A Detailed Description of an Alternative Approach to Military Logistics," (Washington D.C.: Logistics Integration Agency); January 1999; 6.

¹¹ Department of Defense, <u>Joint Doctrine for Global Distribution</u>, Joint Publication 4-09 (First Draft), Washington, D.C.: U.S. Department of Defense, 30 November 1999), I-21.

¹² Department of the Army, <u>Army Management Philosophy</u>, Army Regulation 5-1 (Washington, D.C.:U.S. Department of the Army, 12 June 1992), 3.

¹³ FM 700-80, 1.

¹⁴ Hon. Jacques S. Gansler, "Defense Logistics Reform; Meeting Critical, Modern Warfighter's Needs Affordably." 14 October 1998; available from http://www.acq.osd.mil/ousda.speech/logistics.htm; Internet; accessed 07 December 1999.

¹⁵ JP 4-09, IV-4.

¹⁶ Gansler.

¹⁷ JP 4-09, IV-40.

- ¹⁸ Thomas Sweeney, "Paying for Modernization Defense Science Board 1996 Summer Study"; Briefing without scripted text; Carlisle Barracks: U.S. Army War College, February 2000.
- ¹⁹ Dr. John J. Coyle, "Trends and Best Practices in Supply Chain Management", briefing without scripted text; Defense Distribution Depot Susquehanna: The Pennsylvania State University, Center for Logistics Research; December 1999.
- ²⁰ Dr. Michael Hammer, "Reengineer or Perish: An Exclusive Interview with Dr. Michael Hammer," interview by G. Berton Latamore, <u>APICS-The Performance Advantage</u>, Volume 99, No. 1, January 1999; available from http://www.apics.org/magazine/jan 99/latamore.htm; Internet; accessed 04 April 2000.
- ²¹ Ibid.
- ²² Ibid.
- ²³ Ibid.
- ²⁴ William T. Walker and Karen L. Alber, "Understanding Supply Chain Management," <u>APICS SCM</u>
 <u>Defining The Supply Chain -- APICS Online Edition, The Performance Advantage</u>, January 1999, Volume 99, No. 1; available from http://www.apics.org/magazine/jan99/walker.htm; Internet; accessed 16 November 1999.
- ²⁵ Ibid.
- ²⁶ JP 4-09, I-13.
- ²⁷ Walker and Alber.
- 28 Ibid.
- ²⁹ Ibid.
- 30 lbid.
- ³¹ ADUSD(L), SCI James T. Eccleston, "About Supply Chain Integration," undated; available from wysiwyg://11/http://www.acq.osd.mil/log/sci/about/about.html; Internet; accessed 04 April 2000.
- ³² JLWI Implementation Plan, HQ US Central Command, Logistics and Security Assistance Directorate (CCJ4/7-P), 7115 South Boundary Blvd, MacDill AFB, FL 33621, 26 Jan 2000; 4.
- ³³ Business Systems Modernization Office, Defense Logistics Agency, "Enterprise-wide Business Systems Modernization," 18 August 1999; available from http://www.supply.dla.mil/diminsion.htm; Internet; accessed 16 September 1999.
- ³⁴ Dr. Todd M. Carrico, "Advanced Logistics Project," briefing slides without scripted commentary, Sequoia Plaza, Arlington, VA, Defense Advanced Research Projects Agency, Joint Logistics Technology Office, 16 February 2000.
- ³⁵ MG Charles Cannon, "Revolution in Military Logistics," briefing slides with scripted commentary. Aberdeen Proving Ground; available from Update to the Ordnance Corps [CD-ROM], undated.

³⁶ BG Stanley A. Sieg, "FY2000 Business Area Plan" – Air Force Materiel Command Supply Management Business Area, 1 October 1999; available from http://www.afmc-mil.wpafb.af.mil/HQAFMC/LG/lgi-Page/smba.htm; Internet; accessed Jan 2000.

³⁷ Navy Sea Logistics Center, "Reengineering Supply," briefing slides without commentary, 01 June 1999; available from wysiwyg://34/http://www.nslc.fmso.navy.mil/InfoCenter/Mision.htm; Internet; accessed 14 November 1999.

³⁸ General Accounting Office, <u>Defense Inventory - Improved Management Framework Needed to Guide Navy Best Practice Initiatives</u>, (Washington D.C.: U.S. general Accounting Office, 21 September 1999) available from Lexis-Nexis Job No. 40:0:4491607.

³⁹ General Accounting Office, <u>USMC Best Business Practices - Focusing to Reduce Costs, Improve Performance</u> (Washington D.C.: U.S. General Accounting Office, 16 September 1999); available from Lexis-Nexis Job No. 59:0:4492042.

⁴⁰ Newing, Rod, "Survey - Enterprise Resource Planning: Industry Is About To Reinvent Itself." <u>Financial Times Limited - London</u> (December 15, 1999). Database on-line. Available from Lexis-Nexis, Job No. 711:0:5945830.

⁴¹ Ibid.

⁴² Cannon.

⁴³ Gansler.

⁴⁴ BYLINE: Staff, "Modern Materials Handling - The brave new world of supply chain software," Information Technology; October 31, 1999; [database on-line]; available from Lexis-Nexis Job No. 40:0:5932989. "Today's warehouse management system and its close cousins are evolving into a new breed of integrated software that seems sure to profoundly influence how you manage each stage of the supply chain."

⁴⁵ No byline, "IBM and Industri-Matematik Announce Next Generation Replenishment Solution for Retail," <u>Universal News Services Limited 2000, PR Newswire,</u> 25 January 2000; [database on-line]; available from Lexis-Nexis Job No. 711:0:5946281.

⁴⁶ lbid.

⁴⁷ Ibid.

⁴⁸ Charles Waltner, "Analysis Tools Help Managers Make The Manufacturing And Delivery Of Goods More Efficient," <u>Information Week</u>, 24 January 2000; [database on-line]; available from Lexis-Nexis Job 29 January 2000; HEADLINE: Supply-Chain Modules Improve On-Time Deliveries.

⁴⁹ Ibid.

No byline, "Automotive Industry Must Embrace Technology Opportunities to Compete," <u>M2</u> PRESSWIRE, 17 January 2000; [database on-line]; available from Lexis – Nexis 29 January 2000.

Michael Smith and COL Scott West, "Joint Logistics Warfighter Initiative (JLWI) – Demonstrating the Logistics Transformation in a Real World Operational Environment," briefing slides without written

commentary, orally presented by LTC John Klotsko, Washington D.C.: The Pentagon, Joint Staff J4 Office, 11 February 2000.

⁵² JLWI Implementation Plan, 7.

⁵³ James B. Emahiser, "Inventory Management - Crucial to Mission Success," <u>Defense Issues: Volume 12, Number 23</u>; March 20, 1997; prepared remarks by James B. Emihaser, ADUSD(Materiel and Distribution Management) to the National Security, International Affairs and Criminal Justice Subcommittee, House government and Oversight Committee; available from http://www.defenselink.mil/speeches/1997/t19970320-emahiser.html; Internet; accessed January 2000.

⁵⁴ lbid.

⁵⁵ Gansler.

⁵⁶ John Rephlo, "Joint Total Asset Visibility," briefing slide without scripted commentary, Washington, D.C, The Joint Staff J4 Office, 11 February 2000.

⁵⁷ General Accounting Office, "Logistics Planning Opportunities for Enhancing DoD's Logistics Strategic Plan," (Washington, D.C.: U.S. General Accounting Office, 18 December 1996); available from http://www.fas.org/man/gao/ns97028.html; Internet; accessed 24 January 2000.

⁵⁸ Hammer.

⁵⁹ Ibid.

⁶⁰ Hon. Jacques S. Gansler, "Transforming DoD Logistics – Higher Performance at Lower Cost," remarks made by Hon. Jacques S. Gansler, Undersecretary of Defense for Acquisition and Technology to the U.S. Army War College Center for Strategic Leadership, Carlisle Barracks, PA, 14 January 1998; available from http://www.acq.osd.mil/log/sci/kbrief/carlisle.html; Internet; accessed 6 April 2000.

⁶¹ No Byline, "Agents of Change – A day in the Life," <u>Chain Store Age</u>, 1 December 1999; [database online]; available from Lexis-Nexis Job No. 711:0:5945800.

⁶² Ibid.

⁶³ Ibid.

⁶⁴ "Modern Materials Handling...

⁶⁵ Ibid.

⁶⁶ Ibid.

⁶⁷ Department of Defense, DoD Logistics Strategic Plan (linked to OSD supply chain integration web site); "Component Positions," undated; available from http://www.gravity.lmi.org/logisticsplan/Compo1.html; Internet; accessed 18 February 2000.

⁶⁸ Peter F. Drucker, <u>Management Challenges for the 21st Century</u> (New York, N.Y.: Harper Collins, 1999), 87.

- ⁶⁹ Ibid, 88.
- ⁷⁰ JLWI Implementation Plan, 4.
- ⁷¹ Scott Rossbaugh, "Strategic Distribution Management Initiative (SDMI) Information Brief," briefing slides without scripted commentary, New Cumberland, PA: Defense Distribution Center, 10 December 1999.
- ⁷² Carrico.
- ⁷³ Gansler.
- ⁷⁴ General Accounting Office, "Logistics Planning Opportunities...
- ⁷⁵ Ibid.

BIBLIOGRAPHY

- U.S. Department of the Army, <u>The Systems Approach to Logistics.</u> Field Manual 700-80. Washington, D.C.: U.S. Department of the Army, 15 August 1985.
- U.S. Department of the Army, U.S. Army Training and Doctrine Command, <u>Battlefield Distribution</u>, TRADOC Pamphlet 525-77. Fort Monroe, VA.: U.S. Department of the Army, U.S. Army Training and Doctrine Command, 2 February 1998.
- Cohen, William S. <u>Annual Report to the President and Congress 1999 Chapter 10, The Revolution in Military Affairs and Joint Vision 2010</u>. Washington, D.C.: Office of the Secretary of Defense, 1999. Available from http://www.dtic.mil/execsec/adr1999/chap10.html, Internet: 3 April 2000.
- Joint Staff J4 Projects, Department of Defense. "Focused Logistics, Joint Deployment and Rapid Distribution." January 2000. Available from http://www.dtic.mil/jcs/j4/projects/foclog/execsum.html. Internet. Accessed 10 January 2000.
- Payne, David. <u>Logistics Integration Agency Background Paper</u>. "An Elaboration on the Revolution in Military Logistics A Detailed Description of an Alternative Approach to Military Logistics." Washington D.C.: Logistics Integration Agency, January 1999.
- U.S. Department of Defense. <u>Joint Doctrine for Global Distribution.</u> Joint Publication 4-09 (First Draft). Washington, D.C.: U.S. Department of Defense. 30 November 1999.
- Gansler, Jacques S. "Defense Logistics Reform; Meeting Critical, Modern Warfighter's Needs Affordably." 14 October 1998. Available from http://www.acq.osd.mil/ousda.speech/logistics.htm. Internet. Accessed 07 December 1999.
- U.S. Department of the Army. <u>Army Management Philosophy</u>. Army Regulation 5-1. Washington, D. C.:U.S. Department of the Army, 12 June 1992.
- Coyle, Dr. John J. "Trends and Best Practices in Supply Chain Management." Briefing without scripted commentary. New Cumberland, PA: The Pennsylvania State University, Center for Logistics Research, December 1999.
- Sweeney, Thomas. "Paying for Modernization Defense Science Board 1996 Summer Study." Briefing without scripted text. Carlisle Barracks: U.S. Army War College, February 2000.
- Hammer, Dr. Michael. "Reengineer or Perish: An Exclusive Interview with Dr. Michael Hammer," Interview by G. Berton Latamore. <u>APICS-The Performance Advantage</u>, Volume 99, No. 1, January 1999. Available from http://www.apics.org/magazine/jan 99/latamore.htm. Internet. Accessed 04 April 2000.
- Walker, William T. and Alber, Karen L., "Understanding Supply Chain Management." <u>APICS SCM</u>
 <u>Defining The Supply Chain -- APICS Online Edition, The Performance Advantage</u>, January 1999,
 Volume 99, No. 1. Available from http://www.apics.org/magazine/jan99/walker.htm. Accessed 16
 Nov 1999.
- Eccleston, ADUSD(L), SCI James T. "About Supply Chain Integration." Undated. Available from wysiwyg://11/http://www.acq.osd.mil/log/sci/about/about.html. Internet. Accessed 04 April 2000.
- H.Q. U.S. Central Command, Logistics and Security Assistance Directorate (CCJ4/7-P). <u>Joint Logistics</u> <u>Warfighter Initiative Implementation Plan</u>. 7115 South Boundary Blvd., MacDill Air Force Base, FL. 26 January 2000.

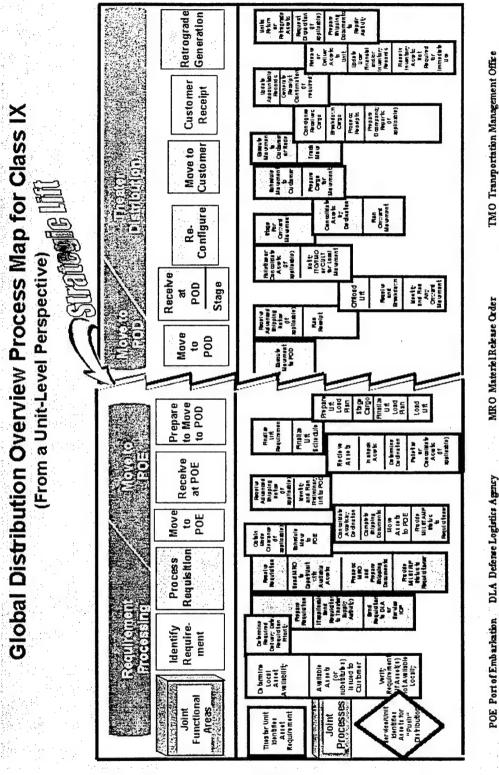
- Defense Logistics Agency, Business Systems Modernization Office. "Enterprise-wide Business Systems Modernization." 18 August 1999. Available from http://www.supply.dla.mil/diminsion.htm. Internet. Accessed 16 September 1999.
- Carrico, Dr. Todd M., "Advanced Logistics Project." Briefing slides without scripted commentary. 2110 Washington Blvd, Sequoia Plaza, Arlington, VA: Defense Advanced Research Projects Agency, Joint Logistics Technology Office, 16 February 2000.
- Cannon, MG Charles. "Revolution in Military Logistics". Briefing slides with scripted commentary. Available from Update to the Ordnance Corps CD
- Sieg, BG Stanley A. "FY2000 Business Area Plan" Air Force Materiel Command Supply Management Business Area. 1 October 1999. Available from http://www.afmc-mil.wpafb.af.mil/HQAFMC/LG/lgi-Page/smba.htm. Accessed Jan 2000.
- Thorogood, Cdr Paul J. "Air Force Supply chain Management." Briefing slides with scripted commentary. Wright Patterson Air Force Base: H.Q. Air Force Materiel Command. Undated. Acquired December 1999.
- U.S. General Accounting Office. <u>Defense Inventory Improved Management Framework Needed to Guide Air Force Best Practice Initiatives</u>. Washington D.C.: U.S. General Accounting Office, 18 November 1999. Available from Lexis-Nexis Job No. 711:0:5946209.
- Navy Sea Logistics Center, "Reengineering Supply." Briefing slides without commentary. 01 June 1999. Available from wysiwyg://34/http://www.nslc.fmso.navy.mil/InfoCenter/Mision.htm. Internet. Accessed 14 November 1999.
- U.S. General Accounting Office. <u>USMC Best Business Practices Focusing to Reduce Costs, Improve Performance</u>. Washington D.C.: U.S. General Accounting Office, 16 September 1999. Available from Lexis-Nexis Job No. 59:0:4492042.
- Newing, Rod, "Survey Enterprise Resource Planning: Industry Is About To Reinvent Itself." <u>Financial Times Limited London</u> (December 15, 1999). Database on-line. Available from Lexis-Nexis, Job No. 711:0:5945830.
- U.S. General Accounting Office. <u>Defense Inventory Improved Management Framework Needed to Guide Navy Best Practice Initiatives</u> (Washington D.C.: U.S. General Accounting Office, 21 September 1999). Available from Lexis-Nexis Job No. 40:0:4491607.
- BYLINE: Staff. "Modern Materials Handling The brave new world of supply chain software." <u>Information Technology</u>; October 31, 1999. [database on-line]. Available from Lexis-Nexis Job No. 40:0:5932989.
- No byline. "IBM and Industri-Matematik Announce Next Generation Replenishment Solution for Retail." <u>Universal News Services Limited 2000, PR Newswire,</u> 25 January 2000. [database on-line]. Available from Lexis-Nexis Job No. 711:0:5946281.
- Waltner, Charles. "Analysis Tools Help Managers Make The Manufacturing and Delivery Of Goods More Efficient." <u>Information Week</u>, 24 January 2000. [database on-line]. Available from Lexis-Nexis Job 29 January 2000; HEADLINE: Supply-Chain Modules Improve On-Time Deliveries.
- No Byline. "Automotive Industry Must Embrace Technology Opportunities to Compete." <u>M2</u>
 <u>PRESSWIRE</u>, 17 January 2000. [database on-line]. Available from Lexis Nexis 29 January 2000.

- Smith, Michael and West, COL Scott. "Joint Logistics Warfighter Initiative (JLWI) Demonstrating the Logistics Transformation in a Real World Operational Environment." Briefing slides without written commentary, orally presented by LTC John Klotsko. Washington D.C.: The Pentagon, Joint Staff J4 Office, 11 February 2000.
- Emahiser, James B. "Inventory Management Crucial to Mission Success." <u>Defense Issues: Volume 12, Number 23</u>; March 20, 1997. Prepared remarks by James B. Emihaser, ADUSD(Materiel and Distribution Management) to the National Security, International Affairs and Criminal Justice Subcommittee, House government and Oversight Committee. Available from http://www.defenselink.mil/ speeches/1997/t19970320-emahiser.html. Internet. Accessed January 2000.
- Rephlo, John. "Joint Total Asset Visibility." Briefing slide without scripted commentary. Washington, D.C, The Joint Staff J4 Office, 11 February 2000.
- U.S. General Accounting Office. "Logistics Planning Opportunities for Enhancing DoD's Logistics Strategic Plan." Washington, D.C.: U.S. General Accounting Office, 18 December 1996. Available from http://www.fas.org/man/gao/ns97028.html. Accessed 24 January 2000.
- Gansler, Hon. Jacques S. "Transforming DoD Logistics Higher Performance at Lower Cost." Remarks made by Hon. Jacques S. Gansler, Undersecretary of Defense for Acquisition and Technology. Carlisle Barracks, PA: U.S. Army War College Center for Strategic Leadership, 14 January 1998. Available from http://www.acq.osd.mil/log/sci/kbrief/carlisle.html. Internet. Accessed 6 April 2000.
- No Byline. "Agents of Change A day in the Life." <u>Chain Store Age</u>, 1 December 1999. [database online]. Available from Lexis-Nexis Job No. 711:0:5945800.
- U.S. Department of Defense. DoD Logistics Strategic Plan. (Linked to OSD supply chain integration web site). "Component Positions." Undated. Available from http://www.gravity.lmi.org/logisticsplan/Compo1.html. Internet. Accessed 18 February 2000.
- Drucker, Peter F. Management Challenges for the 21st Century. New York, N.Y.: Harper Collins, 1999.
- Rossbaugh, Scott. "Strategic Distribution Management Initiative (SDMI) Information Brief." Briefing slides without scripted commentary. New Cumberland, PA: Defense Distribution Center, 10 December 1999.
- Haverly, Richard C. and Whelan, James F. "Logistics Software Selection Tool." Prepared by Andersen Consulting. [CD-ROM] Oak Brook, IL: The Council of Logistics Management, 1999 Edition.
- Magee, Dr. Roderick R. II, ed. <u>Strategic Leadership Primer</u>. Carlisle barracks, PA: Department of Command, Management and Leadership, U.S. Army War College, 1998.
- Shalikashvili, GEN John M. <u>Joint Vision 2010</u>. "The conceptual template for how we will channel the vitality of our people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting." Washington, D.C.: U.S. Department of Defense, 1996.
- Trayhorn, Chris. Achieving Supply Chain Excellence Through Technology. A Thought Leadership Project Sponsored by Andersen Consulting. Undated. San Fransisco, CA: Montgomery Research Inc Available at http://www.ascet.com. Internet. Accessed Jan-Apr 2000.
- David, Fred R. Strategic Management Concepts. Upper Saddle River, NJ: Prentice Hall Inc., 1998.

APPENDIX - A CLASS IX - REPAIR PARTS SUPPLY PROCEDURES

Class IX. Class IX includes all types of repair parts, except medical equipment parts. Repair parts are the most intensively managed class of supply. Each Service unit deploys with an allowance of Class IX materiel calculated to support unit equipment, within the unit maintenance capability, for a predetermined period. Higher echelon units possessing more comprehensive maintenance capabilities stock greater range and depth of repair parts. This investment in consumer-level repair part inventories is a major Service operating expense. Efforts to reduce these costs have resulted in unit allowance decreases based on revised maintenance strategies and/or improved methodologies for determining the optimum repair part inventory mix to attain prescribed weapon system operational availability. The implication of this reduced unit stock is increased volume and velocity demands on the global distribution system to support joint forces. Figure A-1 is an overview process map for global distribution of Class IX materiel.

• Requirements Determination/Stocking Policy. Repair part requirements are typically based on unit allowances and predicted demands to resupply consumed inventory or obtain non-stocked items. Repair parts consumption is closely related to the operating tempo of military forces. Service and DLA wholesale inventory levels are calculated to support these resupply and non-stocked demands. These wholesale Class IX inventory levels are regularly adjusted based on actual demand by the DOD stratification process. The Services have materiel management responsibility for depot level reparable items and major items/assemblies in their weapons systems, while DLA manages most consumable items. The Services' materiel management responsibilities for Class IX are executed through the Service logistics commands and their inventory control activities. DLA materiel management responsibility for assigned Class IX items is executed through the DLA weapon system inventory control points. Operational/theater level requirements planning is typically based on operating tempo and associated consumption rates for Class IX items as calculated by Service allowance development methodologies for days of operation, flying hours, or other pertinent employment factors that affect weapon system materiel readiness.



CULT Common User Land Transportation

MILSTAMP Military Standard Transportation and Movement Procedures

MILSTRIP Military Standard Requisitioning and Issue Procedures

ICP Inventory Control Point

POD Port of Debarkation

ITO Installation Transportation Officer

Figure A-1. Global Distribution Overview Process Map for Class IX Materiel

Theater distribution plans may include specific Class IX stocking direction for critical items and high usage items to be prepositioned, or brought into theater, and staged at the appropriate operational or maintenance echelon to maximize weapon system availability.

- Acquisition / Procurement. Service and DLA ICPs use a range of procurement methods to satisfy the requirements for Class IX materiel. These range from large multi-product/multi-year contracts that supply distribution depot stocks, to emergency quick response purchases to satisfy emergent customer demands. Improvements to Class IX distribution support are primarily based on emerging product support initiatives. These initiatives will affect the manner in which weapon system life cycle support is acquired and executed and may range from across the spectrum from full organic Service support to total CLS. CLS support for a given weapon system may result in reduced uniformed maintenance and distribution support personnel, and global distribution efficiencies as DOD inventories, transportation and theater distribution are replaced, in whole or in part, by commercial alternatives. These efficiencies must be weighed against the possible disruption of commercial support during wartime conditions.
- Requisition Process. Joint forces obtain Class IX items from own unit stocks when available and requisition unit stock replenishment and not carried items using standard Service MILSTRIP procedures. A variety of forms and systems have been developed by the Services to facilitate this process, all of which interface with the Defense and Service supply systems. Some weapon system programs maintain specialized material support arrangements that are outside of the standard DOD depot system. To the maximum extent possible, the arrangements should be interoperable with standard requisitioning processes to avoid burdening the warfighter.
- Physical Distribution / Transportation. Shipment of Class IX materiel is typically through standard DTS channels. For shipments from DLA distribution depots, materiel is delivered to local customers by defense depot transportation assets, and for customers outside of the geographic region, by overnight express truck (for bulk shipments) or parcel post (for smaller shipments). For high priority shipments outside of the geographic region, the fastest traceable commercial or DOD air shipment means is used to get the materiel to the customer as quickly as possible. Shipments destined for OCONUS locations go by surface container lift for low priority requirements and by air shipment for high priority requirements. Air shipment methods include the entire range of options from Worldwide Express (WWX), Air Mobility Express (AMX), Air Lines of Communication (ALOC), Commercial Air Lines of Communication (COMALOC), and Premium Service to direct vendor shipments using commercial air parcel delivery services. The interface of Class IX strategic lift, both DTS and commercial, with operational/tactical distribution systems is critical to joint force materiel readiness. Strategic level cargo consolidation offers opportunities to improve throughput to the

operational/tactical level with a trade-off being the time necessary to accumulate unit-specific cargo for consolidation prior to lift. In-theater reception and forwarding of high priority

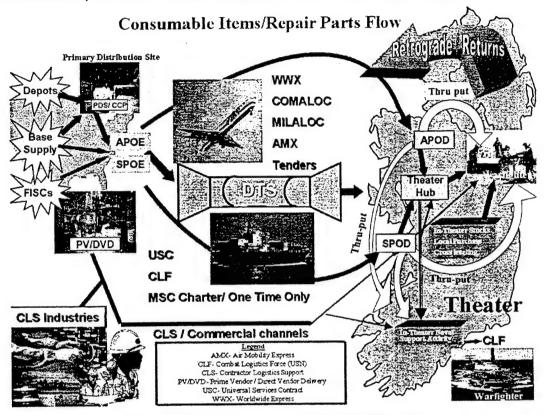


Figure A-2. Consumable Items/Repair Parts Flow

airlifted materiel to end-users must be resourced and operated with corresponding expediency whether using intratheater airlift or ground transportation to complete the final leg(s) of the delivery function. In transit visibility (ITV) for high priority shipments is essential to attain Class IX materiel support with reduced unit and theater stockage. Figure A-2 illustrates the flow of Class IX materiel.

- Retrograde and Return. Usable excess consumable items and all reparable items are reported to the
 cognizant materiel manager for return or disposition decisions. Reparable items are returned to the
 established overhaul point for repair and subsequent return to the global distribution system.
 Intensive programs have been established to monitor reparable issues and returns, simplify the return
 process, and create incentives for operating forces to minimize losses. Loss of a reparable
 component robs the system of a needed item and incurs additional time and cost to reprocure. ITV of
 retrograde reparable items is mandatory to minimize reparable item loss or delay.
- Disposal. Usable consumable items determined excess by the materiel manager, and unusable consumable items, are transferred to DRMS for redistribution or disposal action. Disposition action on reparable items is typically made by the designated overhaul point, so operating forces will rarely

transfer reparable items to disposal unless specifically instructed by the materiel manager. Many Class IX items are commercial control list items requiring special disposal oversight. Coordination between DRMS and Service authorities is necessary to ensure demilitarization requirements are met in-theater. If in-theater disposal options are not viable, retrograde to CONUS may be required.

- Environmental Considerations. Most Class IX materiel does not present environmental threats.
 Certain items may contain hazardous components, such as radioactive material. These items are identified in DOD and Service logistics information systems as special handling items and require special care in packaging, marking, storage, transportation, and disposal.
- Redeployment. Units typically reconstitute unit Class IX stocks, when feasible, prior to redeployment.
 Service components may cross-level critical Class IX items from redeploying units to other units to fill shortfalls, particularly for scarce reparable items.

NOTE: This Appendix is a direct lift from Chapter IV, pages 49-56, Joint Publication 4-09, Global Distribution. It has been included as supporting information to describe the Class IX Distribution process in detail without including it in the main body of the paper.

APPENDIX - B RESPONSIBILITIES

General -- The global distribution system has numerous stakeholder commands and agencies. Participants in joint force operations must clearly understand the roles of these stakeholders in global distribution as the first step in planning and conducting integrated and coordinated distribution support. This chapter identifies the distribution-related missions and relationships of the primary commands and agencies as required by Title 10 USC and DoD Directive 5100.1.

Secretary of Defense

The Secretary of Defense is responsible for the assignment of forces and lift resources to the combatant commands to perform missions assigned to those commands and for strategic interagency coordination at the national level. The Secretary's responsibilities include the following primary global distribution functions:

- a. Identify those industrial products and facilities that are essential to mobilization readiness, national defense, or post attack survival.
- b. Analyze potential effects of national security emergencies on actual production capability, taking into account the entire production complex, including shortages of resources. Develop preparedness measures to strengthen capabilities for production increases in emergencies.
- c. Provide management direction for the stockpiling of strategic and critical materials; conduct storage, maintenance, and quality assurance operations for the stockpile of strategic and critical materials; and formulate plans, programs, and reports relating to the stockpiling of strategic and critical materials.
- d. Establish policies and provide guidance to DOD components and the Military Services concerning the effective and efficient use of supply and transportation systems and coordinate transportation policy, planning, and operations within the Department of Defense.

Chairman of the Joint Chiefs of Staff

a. As the principal military advisor to the President and Secretary of Defense, the Chairman is assigned specific supervisory and joint operation planning responsibilities in the areas of strategic direction, strategic planning, and joint operation planning. The Chairman of the Joint Chiefs of Staff responsibilities most directly related to global distribution include the following:

- Prepare joint logistic and mobility plans to support strategic plans and recommend the assignment of logistic and mobility responsibilities to the Armed Forces in accordance with those plans.
- Ascertain the logistic support available to execute general war and joint operation plans (OPLANs) of
 the combatant commanders and advise the Secretary of Defense on critical deficiencies and
 strengths in force capabilities (including manpower, logistics, and mobility support). Assess the effect
 of such deficiencies and strengths on meeting national security objectives, policies, and strategic
 plans.
- Recommend to the Secretary of Defense appropriate logistics guidance for the Military Services that,
 if implemented, will result in logistic readiness consistent with approved plans.
- Prepare and submit to the Secretary of Defense general strategic guidance for use in the development of industrial and manpower mobilization programs.
- Prepare and submit to the Secretary of Defense statements of military requirements based on US strategic plans. These statements include tasks, priority of tasks, force requirements, and general strategic guidance for developing military installations and bases and for equipping and maintaining military forces.
- b. For global distribution operations, as part of joint operation planning and execution, the Chairman is responsible for the following movement requirements, resources, and allocated capability:
 - Establish procedures in accordance with the Assistant Deputy Under Secretary of Defense
 [Transportation Policy], the Secretaries of the Military Departments, and DLA for the submission of
 movement requirements by DOD user components to the United States Transportation Command
 (USTRANSCOM). In addition, establish procedures for the submission of evaluated requirements
 and capabilities by USTRANSCOM and the transportation component commands (TCCs) to the
 Chairman of the Joint Chiefs of Staff.
 - Prescribe a materiel issue and movement priority system in agreement with the Uniform Materiel
 Movement and Issue Priority System (UMMIPS) that will ensure responsiveness to meet the needs
 of the using forces. UMMIPS is an element of the logistic management function and is one of the
 governing factors for performance of the global distribution system.
 - · Monitor the capabilities of USTRANSCOM common-user transportation resources to provide airlift,

sealift, CONUS land transportation, common-user ocean terminal service, and aerial port service based upon the requirements of DOD components.

- Assign movement priorities in support of DOD components based upon capabilities reported by USTRANSCOM.
- Apportion strategic lift assets through the Chairman of the Joint Chiefs of Staff Instruction (CJCSI) 3110.01A, "Joint Strategic Capabilities Plan (JSCP)," and CJCSI 3110.11B, "Mobility Supplement to the Joint Strategic Capabilities Plan."
- Allocate strategic lift assets through the CJCS execute order to the supported combatant commander.

Military Departments and Services

- a. Military Departments. The Secretaries of the military departments are responsible for the following global distribution related functions enumerated in DOD Directive 5100.1, "Functions of the Department of Defense and Its Major Components":
 - Exercise authority to conduct all affairs of their Departments to include organizing, supplying, equipping, training, servicing, mobilizing, demobilizing, administering, and maintaining forces.
 - Prepare forces and establish reserves of manpower, equipment, and supplies for the effective prosecution of war and MOOTW.
 - Recruit, organize, train, and equip interoperable forces for assignment to combatant commands.
 - Conduct research; develop tactics, techniques, and organization; and develop and procure weapons, equipment, and supplies essential to the fulfillment of functions assigned by the Secretary of Defense.
 - Create, expand, or maintain an infrastructure that supports US forces using installations and bases, and provide administrative support, unless otherwise directed by the Secretary of Defense.
 - Plan and execute cross-servicing agreements for supply, maintenance, and transportation operations to support other Services and joint operations.

- b. Military Services. The Army, Marine Corps, Navy, and Air Force, under their respective departmental Secretaries, and the Coast Guard, under the Department of Transportation in peacetime and the Department of the Navy in wartime, are responsible for organizing, equipping, and training their Service forces. In terms of global distribution, their paramount responsibility centers on equipping their forces. This includes:
 - Developing weapon system integrated logistic support.
 - Determining the viability, capability, and cost effectiveness of each design's supply support requirements.
 - Determining, for Service-managed materiel, supply inventory management factors such as item essentiality and reliability, inventory levels, allowances, packaging and preservation requirements, hazardous materiel and hazardous waste, inventory locations, repair cycles, attrition rates, replenishment lead times, the length and level of interim supply support, the degree of contractor support, and materiel to be prepositioned and war reserves. For items managed and/or distributed by DLA, provides coordination on materiel management factors for service-interest items.
 - Performing supply support functions, including:
 - Providing inputs to the life cycle logistic functions.
 - Developing, implementing, monitoring, and evaluating the supply policy, programs, and procedures for weapons systems/equipment throughout the life cycle phases.
 - Providing material in support of weapon systems/equipment throughout the life cycle process.
 - Managing materiel disposal and reutilization programs in coordination with the Defense Reutilization and Marketing Service (DRMS)
 - In the role of common-user military transportation services, the Army, Marine Corps, Navy,
 Coast Guard, and Air Force are all generically called shipper services. Each Service is
 responsible for the administrative support and performance of transportation operations
 assigned by combatant commanders at either their local shipping installations or throughout
 the theater.
 - Resource and provide traffic management and physical distribution capabilities through respective Service TCCs: Army: Military Traffic Management Command; Air Force: Air

Mobility Command; and Navy: Military Sealift Command.

- Performing Executive Agent and/or Lead Organization for common user logistics (CUL) support functions.
 - Executive agents are DOD components that have been formally designated by the President, the Secretary of Defense, or Congress as the sole agency to perform a function or service for others by Presidential directive, legislative action, or Office of the Secretary of Defense (OSD) directive, instruction, or memorandum. An example of executive agency is the assignment of the Department of the Army as single military mail manager. This function is conducted through the Military Postal Service Agency, a jointly staffed headquarters organization. DOD executive agency typically applies to strategic level responsibilities and may or may not apply to CUL support in actual joint/multinational operations. Theater level postal functions, for example, are typically carried out on an individual Service basis with mail processing hub operations conducted by individual Service or jointly staffed units as directed by the combatant commander.
 - Lead organizations for CUL support functions are joint forces, Service components, or DOD agencies responsible for specific common-user item/Service support in a joint/multinational operation, as defined in OPLANs/operation orders (OPORDs). If a Service component is assigned as the lead organization, it is referred to as a lead Service. Examples of lead Service responsibilities are common user land transportation, operational ration distribution, potable water, and bulk fuel. In a large area of responsibility (AOR), lead Service responsibilities for a given CUL support function may be divided along geographic lines among more than one Service component.

NOTE: This Appendix is a direct lift from Chapter II Joint Publication 4-09, Global Distribution (DRAFT). It has been included as supporting information.

APPENDIX C

MAJOR MILITARY STANDARD LOGISTICS SYSTEMS (MILS) DESCRIPTIONS

This page summarizes, at a basic level, standard business processes and procedures prescribed by the major MILS (also referred to as the Defense Logistics Standard Systems (DLSS)).

- 1. <u>Military Standard Requisitioning and Issue Procedures (MILSTRIP)</u> prescribes standard procedures, methods, rules, data elements and codes, forms, documents, formats and time standards for the interchange of logistics information relating to requisitioning, supply advice, supply status, materiel issue, shipment status, materiel receipt, materiel returns, redistribution, and reclamation processes. The procedures govern the interchange of information for materiel commodities between supported activities and inventory control and distribution systems in the Department of Defense (DoD) and other participating organizations.
- 2. <u>Military Standard Transaction Reporting and Accounting Procedures (MILSTRAP)</u> prescribes standard methods, policies, procedures, data elements and codes, documents, and time standards for the flow of inventory accounting information. Procedures are applicable between inventory control points, stock control activities, storage and depot sites and posts, camps, or bases.
- 3. Military Standard Transportation and Movement Procedures (MILSTAMP) Volume I, implements DOD policy for the transportation of material to and from overseas locations. It prescribes standard data elements and codes, formats, rules, methods, and procedures required by the Services and Agencies to support the transportation data requirements for movement in the Defense Transportation System (DTS). Volume II implements DOD policy for the payment of transportation services. It prescribes standard data elements and codes, formats, rules, methods, and procedures required by the Services and Agencies to support the billing and payment of transportation charges for the movement of cargo in the Defense Transportation System (DTS).
- 4. <u>Military Standard Contract Administration Procedures (MILSCAP)</u> provides uniform procedures, rules, formats, time standards, and standard data elements for codes for the interchange of contract-related information between and among DOD components and contractors
- 5. <u>Military Standard Billing System (MILSBILLS)</u>, provides standard data elements and codes, procedures, and formats to be used for billing and related adjustments, and collections for sales of materiel. This system provides the standard procedures and formats used by the interfund billing system; that is, an automated, seller originated, self-reimbursement process.